

CLAIMS

What is claimed is:

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1. An optical compensation film for a liquid crystal display comprising a polymer capable of producing light induced anisotropy characterized in that the polymer has been irradiated with light to form at least one optical axis.
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2. The optical compensation film of claim 1, wherein the polymer is selected from the group consisting of polyimides, methacrylates, acrylates, vinyls, vinyl ethers, siloxanes, styrene, epoxy polymers containing a functional group in at least one of a main chain and a side chain, and mixtures thereof, wherein the functional group is selected from the group consisting of azobenzene, stilbene, cinnamate, maleimide, coumarin, and mixtures thereof.
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3. The optical compensation film of claim 1, wherein the polymer has been irradiated with light that is at least one of linearly polarized light, elliptically polarized light, circularly polarized light, partially polarized light, and non-polarized light.
4. The optical compensation film of claim 1, wherein the polymer has been irradiated a plurality of times.
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5. The optical compensation film of claim 1, wherein the polymer has been irradiated a plurality of times and wherein the light on subsequent irradiations has at least one of a different polarization and a different angle with respect to a plane formed by the film.
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6. The optical compensation film of claim 1, wherein the film is a plane and the optical axis is oriented to the plane in one of lying in the plane of the film, perpendicular to the plane of the film, tilted to the plane of the film, and changing across the film.

7. The optical compensation film of claim 1, wherein the film is a plane and has a biaxial structure, and the film has optical axes that are each one of oriented to the plane in one of lying in the plane of the film, perpendicular to the plane of the film, tilted to the plane of the film, and changing across the film, and wherein the optical axes are oriented different from each other.
8. A liquid crystal display comprising two opposed substrates, electrodes disposed on facing sides of the two opposed substrates, the optical compensation film of claim 1 disposed on at least one of the electrodes, and a liquid crystal disposed between the substrates.
9. A method of making a liquid crystal display cell containing an optical compensation film comprising: providing two opposed substrates, disposing the optical compensation film on at least one of the substrates on a surface of the substrate that faces the other substrate, irradiating the optical compensation film with light, disposing electrodes at one of i) on the substrate prior to disposing the optical compensation film, and ii) on the optical compensation film, disposing a liquid crystal between the substrates, and sealing the substrates together, wherein at least one optical axis is formed in the polymer film.
10. The method of claim 9, wherein the irradiation is at least one of linearly polarized light, elliptically polarized light, circularly polarized light, partially polarized light, and non-polarized light.
11. The method of claim 9, wherein the disposing is spin coating.
12. The method of claim 9, wherein the optical compensation film is a polymer selected from the group consisting of polyimides, methacrylates, acrylates, vinyls, vinyl ethers, siloxanes, styrene, epoxy polymers containing a functional group in at least one of a main chain and a side chain, and mixtures thereof, wherein the functional group is selected from the group consisting of azobenzene, stilbene, cinnamate, maleimide, coumarin, and mixtures thereof.

13. The method of claim 9, wherein the optical compensation film has been irradiated a plurality of times.
14. The method of claim 9, wherein the optical compensation film has been irradiated a plurality of times and wherein the light on subsequent irradiations has at least one of a different polarization and a different angle with respect to a plane formed by the film.
15. The method of claim 9, wherein the film is a plane and the optical axis is oriented to the plane in one of lying in the plane of the film, perpendicular to the plane of the film, tilted to the plane of the film, and changing across the film.
16. The method of claim 9, wherein the film is a plane and has a biaxial structure, and the film has optical axes that are each one of oriented to the plane in one of lying in the plane of the film, perpendicular to the plane of the film, tilted to the plane of the film, and changing across the film, and wherein the optical axes are oriented different from each other.
17. A method of making an optical compensation film comprising: providing a substrate; disposing a polymer in a solvent on the substrate; removing the solvent to form a polymer film; and irradiating the polymer with light, wherein at least one optical axis is formed in the polymer film.